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CONTROL OF RABIES IN NEW YORK CITY *

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The prevention of rabies is often a difficult, expensive, and unsatisfactory procedure. On the one hand, public health authorities are handicapped by the fact that rabies in human beings occurs infrequently, and consequently there appears to be no urgent need for waging constant warfare against the malady; on the other hand, there is the confident expectation and blind faith of the public that adequate protection will be provided against a disease that may assume greater proportions if appropriate measures are lacking. Coupled with these handicaps is an indifference on the part of a considerable number of dog owners for the health and safety of the people generally.

The difficulties encountered in antirabic control can best be understood by a study of the various factors involved, especially in a large city. Therefore, the perplexing phases of the subject will be presented by means of statistical data, with analyses of the findings and suggestions for the more efficient handling of a problem that is becoming increasingly troublesome.

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1. REGULATIONS FOR DOG OWNERS IN NEW YORK CITY PRIOR TO 1935

During the period covered by the present article and until December 11, 1934, the regulations of the Department of Health of the city of New York required that dogs be muzzled when in public places. Unfortunately these regulations were seldom observed by dog owners or enforced by the responsible officials. Consequently it cannot be said that the restrictions were effective or that they were fairly tested. The principal requirements designed for the control of dogs were contained in the sanitary code and read as follows:

SEC. 10. Should a dog bite any person, it shall be the duty of the owner, or person having the same in his possession or under his control, immediately to notify said department [health] thereof, and surrender said dog to said department for inspection and observation.

SEC. 17. No unmuzzled dog shall be permitted, at any time, to be on any public highway or in any public park or place in the city of New York.

After the report of a bite by a dog or other animal is received, the specially devised administrative machinery of the department of health is immediately set in motion. It is the aim of the employees engaged in this departmental activity to leave uncovered no loophole which may lead to the appearance of a case of human rabies. The chief objectives are, first, to protect the bitten person against possible rabies, and second, to locate and observe the animal that inflicted the bite. How this work is handled, how much it costs, and what are the results will be explained in the discussion that follows.

How reports of animal bites are handled.—In each of the five borough health offices there is a clerk whose principal duty it is to receive reports of animal bites and keep the records pertaining thereto. While most of the reports are received from various sources by telephone (this being a requirement of the sanitary code), some of the cases are reported in person, it being widely understood that such notification is necessary and desirable.

Upon receipt of an animal-bite report one of the uniformed police officers, attached to and paid by the department of health, visits the person bitten and the alleged dog owner, if he can be located, for the purpose of securing such preliminary information as may be available. However, experience has shown that much of the information obtained in this way is notoriously unreliable, the person bitten often exaggerating and the dog owner frequently understating the conditions under which the bite is inflicted.

It is the prime function of the sanitary patrolman to arrange for the delivery of all biting dogs to the nearest animal shelter of the American Society for the Prevention of Cruelty to Animals for observation by a department veterinarian. If the dog is manifestly vicious or ill, or the behavior is abnormal, the delivery must be accomplished immediately either by a city or private conveyance.

At the shelter the animal is confined in a separate cage and inspected daily until a decision as to its disposition can be made. Rabid animals are destroyed and their carcasses sent to the department laboratory for examination. The cases of vicious animals and those biting more than once are made the subjects of special hearings, as a result of which destruction or other disposition may be ordered.

When a dog is apparently healthy and the attack was apparently accidental or provoked, it is usually released to its owner after inspection at the shelter by a veterinarian. However, 7 days later the animal is again inspected by the same veterinarian. If no abnormality is noted, the dog is released, the owner being warned that the offense must not be repeated and that the regulations must be observed. For the guidance and peace of mind of the person bitten, a written notice is sent as soon as possible after it has been determined that the animal is free from rabies. However, when bites are severe, and especially when they involve the face, or when the bite has been inflicted by a stray dog that cannot be located, the necessity for the Pasteur prophylaxis is emphasized. When the bitten person declines to receive the prophylaxis, he is required to absolve the department, in writing, from responsibility resulting from the neglect. Of course, when the bite has been inflicted by a manifestly rabid animal or even one suspected of having rabies, the Pasteur prophylaxis is considered imperative. If necessary, persuasion and pressure are exerted in order that the injections may begin promptly and may be continued to completion.

Management of the biting dog.—There are several excellent reasons why calm and cool judgment should supplant hysteria in the handling of a dog that has bitten a human being. When summary action is taken under these circumstances, a valuable though temporarily excited animal that is free from disease may be unnecessarily destroyed. Furthermore, an animal may be destroyed before symptoms of rabies are recognizable, thus depriving the bitten person of the possible protection provided by the Pasteur prophylaxis. Therefore, adequate observation of a biting animal is essential to sensible action.

A rabid animal usually lives 5 or 6 days, and the saliva may be infective 3 or 4 days before clinical symptoms of the disease are manifest. The microscopic evidence of rabies, the Negri bodies, appears but little earlier than the clinical symptoms. When this evidence in the brain is lacking, a portion of the brain may be injected into test animals. However, this test requires from 2 to 4 weeks for its completion. Consequently an animal should not be killed before definite clinical manifestations are apparent.

The antirabic control measures in vogue in New York City may be considered successful, especially in view of the large number of dog

bites and the presence of animal rabies. Therefore, it is well to recount the procedures that are recommended for the first-aid treatment of bites and the institution of Pasteur prophylaxis.

*Cauterization of bites.*¹—Cauterization of animal bites should be done as soon as possible after the wound has been inflicted. Fuming nitric acid is the most effective cauterizing agent, especially when applied within 48 hours. The acid should be applied from the point of a tapered glass rod or drop by drop from a capillary pipette, so that the quantity may be regulated. Contact with bony, cartilaginous, or bloodless parts should be avoided if possible. To these parts pure carbolic acid may be applied, while fuming nitric acid is used on the adjacent tissues. While the actual cautery is effective so far as it reaches the parts of a wound, the fuming nitric acid has the advantage of penetrating deep crevices which the iron cannot reach.

Fuming nitric acid is superior to pure carbolic acid, tincture of iodine, and silver nitrate in wounds made by rabid animals. Such lesions should not be sutured.

Who should receive antirabic prophylaxis?—The Pasteur prophylaxis should be administered to the following classes of persons and under the conditions stated:

1. To persons bitten by animals proved rabid either by clinical symptoms or by microscopic examination of the brain.
2. To persons who have not been bitten but whose hands or face have been contaminated with saliva of a rabid animal. This precaution is taken because of the possible existence of cracks in the skin, hangnails, or other small open wounds. The following incident may be cited in this connection:

A dog, 3 months old, which came from a litter in which the mother and the other animals had rabies, was a pet in a Civilian Conservation Corps camp in Los Angeles County, Calif. Investigation showed that 72 persons, including 62 Civilian Conservation Corps men, 4 United States forest rangers, and 6 civilians were bitten, licked, or otherwise exposed. The Pasteur prophylaxis was administered to all of these men and fortunately no human case of rabies occurred.²

3. To persons bitten by stray dogs which cannot be located—a precautionary measure.

4. Pending the laboratory examination of the brain of a biting animal, the symptoms or actions of which are suspicious, the bitten person may begin the prophylaxis as a precautionary measure.

5. Because of the many nerves in the face, head, and neck and the proximity to the brain, bites on these parts should be regarded as

¹ This information, as well as much that follows, has been abstracted from the Directions for Care and Treatment of Persons Bitten by Rabid Animals, prepared by the Bureau of Laboratories, Department of Health, of New York City.

² One Rabid Puppy Sends 72 Men to Hospital. Weekly Bulletin of the California State Department of Health, Aug. 8, 1933.

particularly dangerous, even though the presence of rabies is not definitely established. In such instances the prophylaxis should begin promptly and be continued with regularity.

Pasteur antirabic prophylaxis (Semple modification).—The material used in New York City is a virus vaccine prepared by the Semple method. It consists of a 4 percent emulsion of killed rabies fixed virus from the brains of rabbits. The virus is killed by incubating the phenolized emulsion for 24 hours at 37° C. Tests are made on susceptible animals to prove the absence of virulent virus.

The Pasteur prophylactic is not curative and is valueless after rabies has developed. The preventive course consists of daily injections for 14 days. Persons bitten on the head or neck by rabid animals, particularly when the wound has not been thoroughly cauterized with fuming nitric acid, may be given 21 or even 28 doses. These extra injections are suggested as a precautionary measure, even though there is no evidence that more than 14 doses are necessary.

Each of the 14 prescribed doses of vaccine is the same, 2 cc; children receive the same amount as adults. The injections are given into widely distant subcutaneous tissues of the anterior abdominal wall and the interscapular region, a cooled, sterile and germicide-free syringe being used. The interval between doses should be about 24 hours. No after-dressing is necessary.

While a patient is receiving the prophylaxis, the bowels should be kept freely open and the drinking of tea, coffee, and alcoholic beverages should be discouraged. Some local soreness, together with erythema about the site of puncture, may occur. Slight malaise may also be noted. Unusual symptoms, such as neuritis, call for prompt investigation by experts of the department of health. While warm and tepid baths are permissible during the course of injections, exposure to cold and cold bathing should be avoided.

2. STATISTICAL DATA

In its efforts to prevent rabies, the department of health has had an extensive and profitable experience, the various phases of which are well shown in the tabulations that follow and the discussion pertaining thereto.

Mortality from rabies.—While the number of human deaths from rabies is comparatively small, even in the aggregate, the fear and anxiety attending bites by the lower animals is so great that the disease assumes justifiable importance. The numbers of deaths from rabies in the United States registration area and in the city of New York during each year from 1908 to 1934 are shown in table 1. It will be noted that with one exception, 1928, the annual number of deaths from rabies in the registration area has been less than 100. The number of deaths ascribed to rabies in New York City during the same

period has been correspondingly low, especially in comparison with the ordinary communicable diseases. No deaths from rabies occurred among human beings in New York City during the years 1931, 1932, and 1933, but 2 deaths from this disease were reported during the month of August 1934.³

TABLE 1.—*Number of human deaths from rabies in the United States registration area and in New York City each year from 1908 to 1934*

Year	Registration area	New York City	Year	Registration area	New York City
1908.....	82	1	1922.....	46	1
1909.....	55	7	1923.....	55	3
1910.....	64	7	1924.....	59	0
1911.....	83	3	1925.....	83	5
1912.....	74	3	1926.....	86	1
1913.....	95	2	1927.....	95	6
1914.....	65	8	1928.....	107	4
1915.....	52	1	1929.....	81	1
1916.....	36	1	1930.....	60	1
1917.....	66	3	1931.....	55	0
1918.....	63	0	1932.....	55	0
1919.....	58	5	1933.....	65	0
1920.....	41	1	1934.....	(¹)	2
1921.....	54	3			

¹ Not available.

Factors influencing mortality from rabies.—The mortality from rabies is influenced by a number of factors, such as species of the biting animal, depth and location of the wounds, extent and thoroughness of first-aid treatment of the wounds, injury through bare skin, the interval between exposure and the institution of prophylaxis, and the methods of prophylaxis. McKendrick,⁴ analyzing the reports from Pasteur institutes, presents findings that greatly increase our understanding of the conditions influencing favorable or disastrous outcome after dog bites.

³ In order to exemplify the conditions under which such fatalities occur, a brief history of one of these cases is given. A 7-year-old boy was bitten by a dog on July 11, 1934, resulting in lacerated wounds of the right eyelid, cheek, and chin. The wound of the eyelid was cleaned with boric acid, followed by a 20-percent solution of argyrol, and then closed with interrupted dermal sutures; the other wounds were cauterized with nitric acid, followed by aromatic spirits of ammonia. On account of the severity of the wounds and the inclusion of the face, a double dose of antirabic vaccine (Semple modification) was administered on July 12. A 2-cc dose of the vaccine was given intramuscularly on the first day, another 2-cc dose on the following day, and 3-cc subcutaneously on the third day. Thereafter 4-cc of the vaccine was administered subcutaneously each day until 15 injections had been received, the last being given on July 26. The child was reported to have been in good condition on July 29.

He remained well until August 5, when early in the morning he complained of pain in the right ear. Later in the day he vomited and continued to vomit at intervals until the following morning. On August 6 paralysis of the right side of the face developed, and there were many general convulsions. Upon admission to the hospital there was difficulty in swallowing, twitching of various parts of the body, and paralysis of the soft palate and vocal cords. The condition rapidly grew worse, cyanosis occurred, and the child died on the night of August 7. A laboratory examination of brain tissue removed at autopsy revealed the presence of Negri bodies.

After a period of observation the dog responsible for the bites was destroyed. Negri bodies were found in the brain tissue of the animal, proving rabies at the time of the biting.

⁴ McKendrick, A. G.: A Third Analytical Review from Pasteur Institutes on the Results of Antirabies Treatment. Extract from the Quarterly Bulletin of the Health Organization of the League of Nations, 1:1, December 1932.

The ratio of mortality among those with deep wounds to that among persons receiving superficial wounds is approximately 4.4:1. The greatest number of wounds occurs on the extremities, and the mortality ratio between head and extremity wounds is 22:1; between head and trunk injuries, 5:1; and between trunk and extremities about even. The shorter period of incubation in the case of bites that are near the brain and the higher mortality in such cases among those receiving prophylaxis lends credence to the belief that the virus is transmitted along nerve trunks. Moreover, the shorter the distance to be traversed by the rabies virus, the shorter will be the latent period and the less time there will be for the establishment of immunity through prophylactic vaccination.

Long-haired dogs have rabies less frequently than short-haired ones, infectious saliva being removed mechanically by the hair. Clothing acts similarly in preventing the entrance of saliva into the tissues. Persons of non-European races who wear little clothing have a higher mortality from bites of rabid animals. The death ratio between those bitten on the bare skin and those bitten through clothing is approximately 9:1.

The handicap of delayed prophylaxis is more evident in subjects bitten in such parts as the head, where a short incubation is to be expected, than in those bitten on the extremities, where longer incubation periods are usual. There is some indication in the available figures that delayed prophylaxis increases the mortality. Therefore, speed is requisite in the treatment of those badly injured.

It is difficult to compare the relative efficiency of the different prophylactic methods because of the heterogeneity of the groups included in McKendrick's study. However, McKendrick reports that 162 persons, or 0.23 percent, of 69,541 individuals who received prophylactic vaccine died of rabies. Among those who received killed vaccine the mortality was 0.28 percent; with live vaccine, 0.21 percent; and with heated vaccine, 0.084 percent. However, the differences may be ascribed to the many variations in conditions between Europeans and non-Europeans rather than to the superiority of any particular prophylactic.

In McKendrick's series there were 19 instances of post-vaccinal paralysis, a percentage of 0.027, among 69,541 persons.

McCoy ⁶ states: "With the data at hand I regret that we have no grounds for recommending or discouraging the use of any form of treatment, nor have we any other suggestions as to how these unfortunate cases (antirabic vaccine paralysis) may be obviated."

Animal bites and rabies.—The effectiveness of rabies control can be gauged to some extent by the numerical relationship between bites

⁶ McCoy, G. W.: Antirabic Vaccine Paralysis; Consideration of Various Vaccines. Pub. Health Rept., 45: 1888, Aug. 15, 1930.

and rabies among the lower animals, especially the dog. In table 2 are recorded the number of reported instances in which individuals were bitten and the number of rabid animals discovered each year from 1908 to 1934 in New York City. It will be noted that the number of persons bitten varied but little from 1908 to 1923, despite the steady population increase. Thereafter a constant increase in the number of bites was recorded until a total of 20,416 was reached

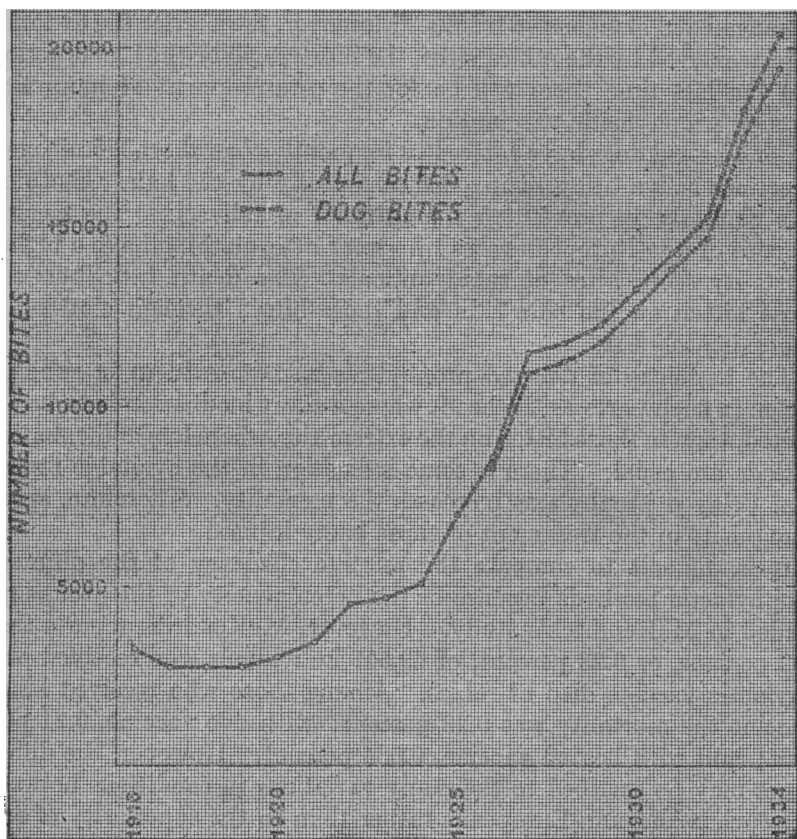


FIGURE 1.—Total number of animal bites in New York City each year from 1916 to 1934 and number of dog bites annually from 1926 to 1934.

in 1934. The relationship between the total number of animal bites and the number of dog bites is available from 1926 to 1934. While the proportion varies slightly from time to time, the year 1934, when dog bites comprised 95.2 percent of the total, may be regarded as typical of the ratio. These data are presented graphically in figure 1. In this connection it should be remembered that many bites, the number of which is merely conjectural, are never reported to the depart-

ment of health. The data here presented are instances definitely known to the authorities.

TABLE 2.—*Total number of reported animal bites, number of dog bites alone, and number of rabid animals reported each year from 1908 to 1934 in New York City*

Year	Total animal bites	Dog bites only	Rabid animals	Year	Total animal bites	Dog bites only	Rabid animals
1908.....	4,622	-----	104	1922.....	4,538	-----	50
1909.....	5,166	-----	57	1923.....	4,699	-----	27
1910.....	3,793	-----	75	1924.....	5,102	-----	30
1911.....	4,500	-----	212	1925.....	7,030	-----	76
1912.....	4,192	-----	239	1926.....	8,608	8,311	463
1913.....	4,366	-----	268	1927.....	11,490	10,974	465
1914.....	4,640	-----	332	1928.....	11,783	11,283	258
1915.....	3,640	-----	116	1929.....	12,279	11,795	157
1916.....	3,247	-----	24	1930.....	13,322	12,781	101
1917.....	2,673	-----	81	1931.....	14,315	13,868	56
1918.....	2,771	-----	18	1932.....	15,330	14,742	18
1919.....	2,778	-----	41	1933.....	18,307	17,563	26
1920.....	3,049	-----	44	1934.....	20,416	19,443	44
1921.....	3,455	-----	85				

According to table 2 there were two periods, one between 1911 and 1915 and the other from 1926 to 1930, when considerable numbers of rabid animals were encountered. The most noteworthy feature of table 2 is the infrequency of animal rabies during the years 1931, 1932, and 1933, while the number of reported bites was increasing. However, it will also be noted that a larger number of human deaths from rabies were reported during the years 1927 and 1928, when rabies among dogs was unduly frequent.⁶

Monthly incidence of bites.—Contrary to what might be expected, the greatest number of animal bites are reported in New York City during the month of June. This fact is clearly shown in table 3, in which is set forth the number of bites during each month of the year, based on a 6-year average from 1929 to 1934. These data are displayed graphically in figure 3. It will be apparent that during July and August, the so-called "dog days", the incidence of animal bites is lower than during May and June. During the winter months, when both people and dogs are less liable to be in contact in the open, the reporting of dog bites is comparatively low. Those periods of the year when dogs spend more time in open places are marked by increased numbers of bites.

⁶ Whether or not the apparent periodicity of animal rabies noted in New York City will be maintained in the future cannot, of course, be foretold. It is said that the same statistical peculiarity has been noted in several European countries. As to the reasons for these periods of high rabies incidence it may be suggested that to some extent the disease increased, (1) because of the introduction of virulent strains of rabies virus; (2) because of certain unrecognized conditions favorable to its dissemination; and (3) because of laxity on the part of responsible officials in exterminating stray, vicious, and sick animals. The records of the health department show that when animal rabies was particularly prevalent, extra efforts were put forth to impound stray and unlicensed dogs. It is conceivable that the favorable conditions that followed may have been due, in part at least, to the lessening of potential rabies carriers.

TABLE 3.—*Number of bites by dogs and other animals in New York City by months (6-year average, 1929–34)*

Month	Average number of bites
January.....	803
February.....	733
March.....	944
April.....	1,222
May.....	1,721
June.....	1,929
July.....	1,842
August.....	1,577
September.....	1,400
October.....	1,083
November.....	930
December.....	843

Dog and other bites.—Of the bites recorded in table 2, more than 95 percent were inflicted by dogs. The number and percentage of per-

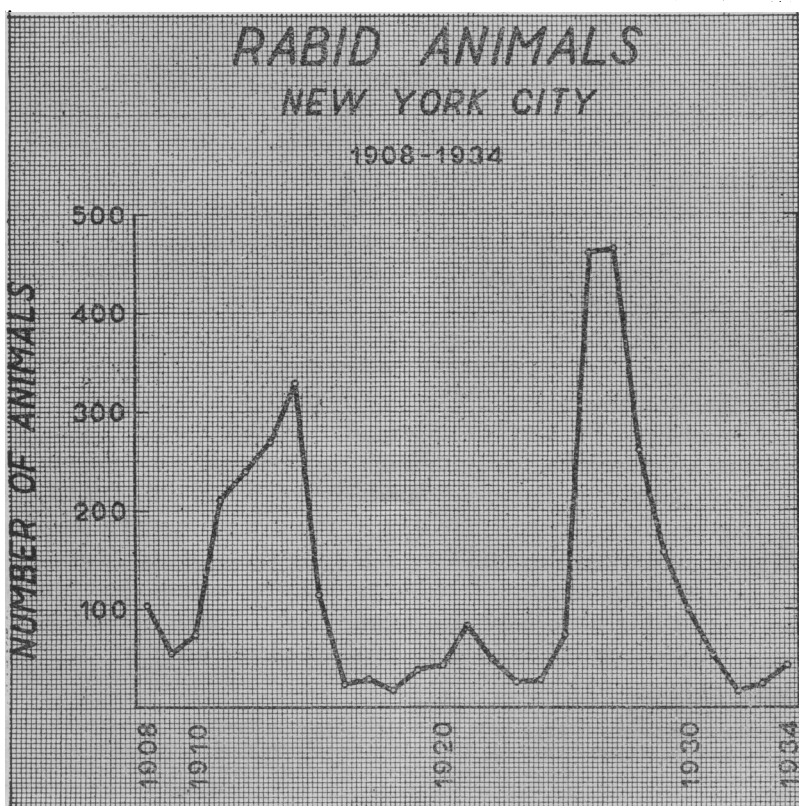


FIGURE 2.—Number of rabid animals encountered in New York City each year from 1908 to 1934.

sons reported to have been bitten by dogs, cats, and other animals in New York City during the years 1933 and 1934 are shown in table

4, these periods being selected as characteristic. Cats are responsible for 2.8 and 3.5 percent of the total numbers in 1933 and 1934, respectively. In addition to bites by dogs and cats, the Department of Health has received reports of bites inflicted by horses, rats,

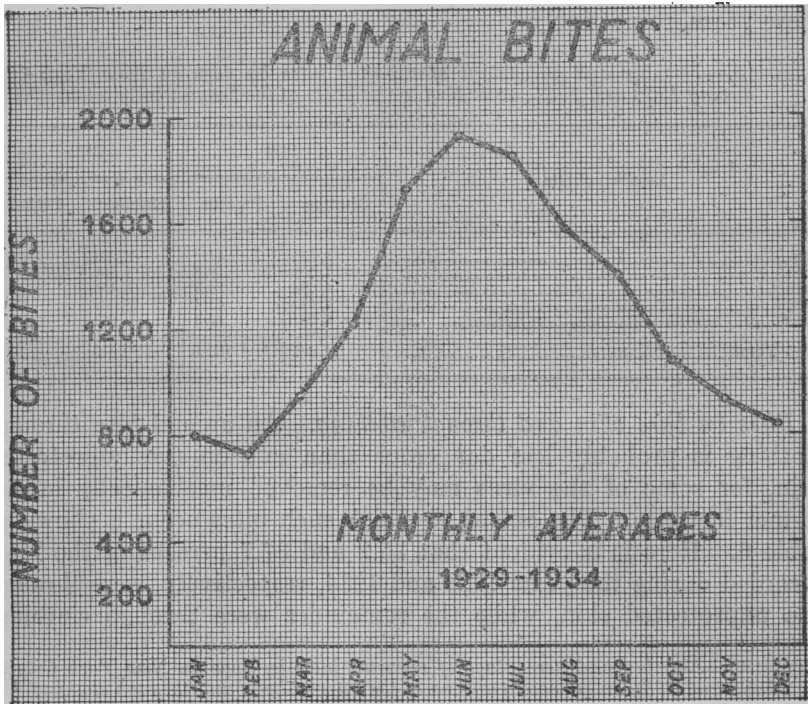


FIGURE 3.—Average monthly number of animal bites in New York City from 1929 to 1934.

squirrels, monkeys, parrots, snakes, insects, and wild animals in captivity, such as bears, lions, and tigers.

TABLE 4.—Number and percentage of persons reported to have been bitten by dogs, cats, and other animals in New York City during the years 1933 and 1934

Number of persons bitten by—	1933		1934	
	Number	Percent	Number	Percent
Dogs.....	17,562	95.9	19,443	95.2
Cats.....	506	2.8	718	3.5
Other animals.....	239	1.3	255	1.3
Total.....	18,307	100.0	20,416	100.0

Locations of bites on human body.—Table 5, which indicates the location upon the body of bites inflicted by dogs in New York City during 1933 and 1934, is of especial interest. This table shows that

nearly one-half of all reported dog bites were upon the legs, while slightly more than one-quarter were inflicted upon the hands. Face bites comprised 8.6 and 9.5 percent of all bites reported in 1933 and 1934, respectively; while bites on the arms accounted for 14.5 and 15.9 percent; and those upon the trunk for 7.1 and 5.1 percent in those years, respectively.

TABLE 5.—*Number and percentage of reported bites by dogs in New York City during 1933 and 1934, according to the parts of the human body bitten*

Location of bite	1933		1934	
	Number	Percent	Number	Percent
Arm.....	2,556	14.5	3,094	15.9
Face.....	1,503	8.6	1,851	9.5
Hands.....	4,682	26.7	5,485	28.2
Leg.....	7,569	43.1	8,032	41.3
Trunk.....	1,252	7.1	981	5.1
Total.....	17,562	100.0	19,443	100.0

Bites on bare skin and through clothing.—An animal bite through clothing is probably less dangerous than one on the unprotected skin, for some of the virus may be removed mechanically in the former instance. The extent to which such bites occur is shown in table 6. Here it is evident that 35.2 and 37.7 percent of the bites recorded during the years 1933 and 1934, respectively, were through the unprotected skin, while the remainder were through clothing.

TABLE 6.—*Number and percentage of reported bites by dogs in New York City in 1933 and 1934 on exposed portions of the human body and through clothing*

Location of bite	1933		1934	
	Number	Percent	Number	Percent
Exposed part.....	6,185	35.2	7,329	37.7
Through clothing.....	11,377	64.8	12,114	62.3
Total.....	17,562	100.0	19,443	100.0

Age groups of persons bitten.—Because children are more frequently in proximity to animals in open spaces and have a propensity for playing with dogs it might be expected that young persons are bitten more frequently than adults. This fact is borne out by the data in table 7, which shows that 59.1 and 58.8 percent of those bitten in New York City during 1933 and 1934, respectively, were under 16 years of age.

TABLE 7.—Number and percentage of persons over and under 16 years of age who were bitten by dogs in New York City during the years 1933 and 1934

Age group	1933		1934	
	Number	Percent	Number	Percent
Over 16 years of age.....	7,188	40.9	8,011	41.2
Under 16 years of age.....	10,374	59.1	11,423	58.8
Total.....	17,562	100.0	19,433	100.0

Location of dogs while biting.—Most bites are inflicted by dogs on streets or in open spaces. However, a considerable number of bites are reported as occurring within homes or within buildings, where many persons live in close proximity. The figures in table 8 show that approximately 34.9 and 37.4 percent of the bites (so-called "inside" bites) occurred in 1933 and 1934, respectively, within homes or buildings, while the remainder were inflicted in the streets, parks, or open spaces.

TABLE 8.—Number and percentage of dogs biting within homes or enclosures and those biting on the streets or open spaces in New York City during 1933 and 1934

Location of dog while biting	1933		1934	
	Number	Percent	Number	Percent
In house.....	6,140	34.9	7,268	37.4
On street.....	11,422	65.1	12,175	62.6
Total.....	17,562	100.0	19,443	100.0

Muzzling.—About 89 percent of the bites reported in New York City during 1933 and 1934 were inflicted by dogs having no restraint. Leashed animals were responsible for 9.5 percent of the bites in 1933 and 9.6 percent of those in 1934. Dogs alleged to have been muzzled were charged with 1 percent of the total number of bites, while still smaller numbers were inflicted by animals said to have been both leashed and muzzled. These data are set forth in table 9.

TABLE 9.—Number and percentage of dogs reported as muzzled, leashed, muzzled and leashed, and without restraint at the time of biting in New York City during 1933 and 1934

Status of dog while biting	1933		1934	
	Number	Percent	Number	Percent
Leashed and muzzled.....	33	0.2	56	0.3
Muzzled.....	178	1.0	236	1.2
Leashed only.....	1,909	9.5	1,865	9.6
Neither leashed nor muzzled.....	15,632	89.3	17,286	88.9
Total.....	17,562	100.0	19,443	100.0

Extent of antirabic prophylaxis.—Of the 18,307 persons bitten by animals in New York City during 1933, which year may be regarded as typical, 3,326, or 18.1 percent, were treated in the clinics especially maintained for this purpose by the department of health in each of the 5 boroughs. These and other pertinent data have been assembled in table 10. Records of the experience in handling the remaining 14,981 bitten persons is not available, as they were treated by private physicians and in hospitals. However, it is likely that approximately the same percentages of patients treated outside of the department of health clinics received the Pasteur prophylaxis.

TABLE 10.—*Number of patients receiving Pasteur antirabic prophylaxis (Semple modification) and number of doses of vaccine administered in each of the 5 borough clinics of the New York City Department of Health in 1933*

	Borough clinics					Total
	Manhattan	Bronx	Brooklyn	Queens	Richmond	
Number of patients.....	1, 203	816	1, 006	292	9	3, 326
Prophylaxis advised.....	882	252	596	99	9	1, 838
Prophylaxis taken.....	382	233	505	82	9	1, 211
Prophylaxis refused.....	500	19	91	17	0	627
Prophylaxis complete.....	216	113	421	60	5	815
14 injections.....	215	111	416	57	5	804
21 injections.....		2	5	3		10
28 injections.....	1					1
Total injections.....	3, 038	1, 596	5, 929	851	70	11, 494
Prophylaxis incomplete.....	166	120	84	22	4	396
Total injections.....	1, 493	854	748	164	4	3, 263

It will be noted that 1,838, or 55.2 percent, of the bitten patients treated in the department of health clinics were advised to avail themselves of the Pasteur prophylaxis (Semple modification), this being supplied without cost by the city of New York for those who cannot afford to pay for the service. Prophylaxis was begun by 1,211, or 36.4 percent, of those bitten, but completed only by 815, or 24.5 percent. Thus, it will be seen that approximately one-half of the bitten persons were advised to take the Semple vaccine, but only one-fourth of all those bitten actually completed the prescribed course of 14 injections. Of the 1,211 persons who began the prophylactic course, 396 failed to receive the complete course. In such instances the bitten person is warned of possible consequences and required to sign a statement absolving the department of health from responsibility in the event that untoward symptoms arise. This procedure serves to impress hesitant persons with the seriousness of the situation.

Records of the department of health show that 14,747 injections of Semple vaccine were administered in 1933. Of these, 11,484 injections were used during complete courses of prophylaxis for 815 indi-

viduals. The remaining 3,263 doses were administered to 396 persons who discontinued the treatment before the prescribed number of injections had been given.

Laboratory examinations.—As shown in table 11, 458 examinations for Negri bodies were made in the department of health laboratories in 1933, and 574 in 1934, of which 5.6 percent were positive in 1933 and 7.6, in 1934, all being among dogs.

Other information of interest in this connection is also shown in table 11. Thus, in 1933, 42 persons were bitten by dogs known to have rabies, while 37 additional persons had some contact with the same animals. In 1934, 77 persons were bitten by rabid dogs and 51 others were in contact. All of the persons bitten by rabid animals during these 2 years received the Pasteur prophylaxis.

TABLE 11.—*Results of laboratory examinations of dogs and cats suspected of having rabies and number of persons bitten by and otherwise in contact with rabid dogs in the city of New York during 1933 and 1934*

Laboratory examinations	1933	1934
Number of dogs.....	427	539
Number of cats.....	31	35
Dogs positive for rabies.....	23	44
Cats positive for rabies.....	0	0
Number of persons bitten by rabid dogs.....	42	77
Number of persons not bitten but otherwise in contact with rabid dogs.....	37	51

3. NEW REGULATIONS FOR DOG OWNERS

The steady increase in the number of dog bites, the obvious failure of the muzzling requirement, the mounting cost of enforcement, and the inefficiency of canine vaccination against rabies convinced the department of health that a radical change of procedure was necessary. In order to learn what has been the experience in other places a questionnaire was sent to the 26 largest cities in the United States. Of these, 19 returned rather complete statistical information and interesting comment. However, it was the general consensus of opinion that, in the absence of any considerable incidence of human rabies, the muzzling of dogs is a failure and leashing is only slightly more enforceable. This arises, according to a number of city health officers, from the indifference of dog owners and law-enforcement officers alike.

On December 11, 1934, the Board of Health of the Department of Health of New York City rescinded the previous regulations and promulgated a new section of the sanitary code, which reads as follows:

SEC. 17. No dog shall be permitted, at any time, to be on any public highway or in any public park or place in the City of New York unless effectively muzzled or restrained by a chain or leash not exceeding six (6) feet in length. [Effective Dec. 11, 1934.]

Under this regulation a dog owner may choose between muzzling or leashing, except in parks, where the latter is required.

Prior to its adoption and in order to insure reasonable enforcement of the leashing regulation, a conference was held with the commissioner of police, the chief magistrate, and a representative of the American Society for the Prevention of Cruelty to Animals. The assurances of these officials that they will cooperate in enforcing the new requirement have been encouraging to the department of health, and the results will be watched with interest. Heretofore, dog owners have protested against muzzling. It now remains to be seen whether the alternative measure will be observed.

Beginning January 1, 1935, the number of sanitary patrolmen attached to the department of health was reduced from 53 to 11. This has effected a considerable saving but has necessitated a radical revision in the method of dog-bite control.

Cost of rabies control.—The cost of rabies prevention to the City of New York is probably in the neighborhood of \$100,000 annually. This would appear to be relatively high were it not for the fact that a large population, estimated at 7,345,357 in 1933, is receiving the benefit of the expenditure. Unlike many other communities in which there is a considerable income from dog licenses, New York City makes this expenditure for the health and safety of its citizens without monetary return.

Under a charter⁷ from the State of New York, the American Society for the Prevention of Cruelty to Animals is empowered to issue licenses for dogs and cats and collect the proceeds. Obviously this deprives the city of a considerable income. However, the society provides a shelter in each of the 5 boroughs in which animals that have bitten may be kept under observation. The society also collects stray animals and destroys those which are vicious or unwanted. The cooperation between this private organization and the city has been cordial and efficient.

The personnel required in the department of health for the prevention of rabies is considerable, as will be seen from the following list:

- (1) One supervising clerk in central office.
- (2) One special dog-bite clerk in each of the five borough offices.
- (3) Up to January 1, 1935, 53 sanitary patrolmen spent about one-fourth of their time making dog-bite investigations; there are now 11. This reduction has resulted in a considerable saving, but has likewise necessitated a radical revision of the method of handling this work. The patrolmen now devote practically full time to the investigation and follow-up of dog-bite reports.
- (4) Nine veterinarians, who spend about two-thirds of their time in dog-bite work.
- (5) Doctors and nurses in each of the five antirabic clinics, which are devoted principally to the administration of Pasteur prophylaxis.

⁷ Laws of 1894, ch. 115, as amended by laws of 1895, ch. 412, and laws of 1902, ch. 495.

In addition to the salaries of these workers there are numerous incidental expenses which greatly increase the expenditures for rabies control. Among these may be mentioned the following:

- (1) Overhead—quarters, light, heat, janitor service, etc.
- (2) Cost of conveying animals that have bitten to shelters for observation.
- (3) Cost of Pasteur prophylactic vaccine and supplies.
- (4) Cost of printing numerous forms used for recording data.
- (5) Cost of laboratory examinations of brain tissue of animals suspected of having rabies.
- (6) Telephone charges.
- (7) Postage and incidentals.

The cost of rabies control to the city of New York does not include the maintenance of the several quarantine and observation shelters, the expense of which is borne by the American Society for the Prevention of Cruelty to Animals. Neither is the cost of first-aid treatment of bites by private physicians, hospitals, and drug stores, or the damage to clothing of those bitten included in the estimate.

It should be pointed out at this time that the service rendered by the department of health in preventing rabies is necessitated by the owning of dogs and other animals by a relatively small portion of the whole population. While the great majority of dogs are licensed in accordance with the requirements, the funds accruing from this source are not being used, except as previously noted, for rabies control. In order that the city may be reimbursed for its expenditures in this work it would seem that sufficient funds should be diverted from the income derived from licenses or that a small additional tax should be collected and utilized for the express purpose of rabies control.

Vaccination against canine rabies.—The preparation of a vaccine that will immunize dogs against rabies is a goal for which many laboratory workers have striven. Unfortunately evidence concerning the value of available vaccines is conflicting, indecisive, and unsatisfactory. Mulcahy,⁸ for instance, believes that rabies is controlled by compulsory vaccination of dogs, and cites the work in the State of Connecticut as an example of its successful application. Planteroux,⁹ in Algiers, strongly favors antirabic vaccination, though admitting occasional failures.

Hufnall¹⁰ believes that proper vaccination prevents rabies in dogs. However, he advocates the establishment of uniform methods of vaccine production, adequate and uniform dosage, and Federal standardization of procedure throughout the United States. Hufnall states

⁸ Mulcahy, John V.: Experience with Canine Antirabic Vaccine. In *Canine-Feline Practice*, compiled by J. V. Lacroix and published by the North American Veterinarian, Jan. 12, 1923.

⁹ Planteroux, E.: Preventive Vaccination Against Rabies. *Revue Vétérinaire et Journal de Médecine Vétérinaire et de Zootechnie*, August 1929.

¹⁰ Hufnall, W. T.: The Rabies Question. *North American Veterinarian*, 15: July 1934.

that the average dog-catching system is operated mainly and directly for the income to be derived for rabies control. Moreover, he intimates that dog catchers are often more energetic in well-to-do sections, where redemptions are likely.

Barnes et al.,¹¹ as the result of extensive experimental work, tentatively conclude that carbolized vaccines do not immunize dogs against rabies. Chloroform-treated vaccines, in their experience, were somewhat more encouraging. They conclude that "There undoubtedly is a successful way of immunizing dogs against rabies, but neither the proper method nor the proper vaccine seems to have been found." The evidence, then, seems to indicate strongly that vaccination against rabies is in the experimental stage and that, despite the claims of a few enthusiastic advocates, reliance should not at present be placed upon this measure. Instead there must be increasingly effective application of such obviously practical methods as licensing, quarantining, and the destroying of stray animals.

4. EDUCATIONAL EFFORTS

Education of prospective dog owners.—In their zealous efforts to control rabies public health officials have concentrated their attention upon two outstanding phases of the problem, namely, control of the biting animal and prophylaxis for the victim of the bite. At the same time an obvious duty has been entirely neglected. This dereliction concerns the failure to emphasize the need for discrimination in the selection, training, and care of dogs. Furthermore, it appears reasonable to decrease the dog population by weeding out the unfit and by stressing the expensiveness, unfairness, and general undesirability of keeping dogs under unfavorable conditions. Manifestly a dog is entitled to humane care.¹²

The size of the dog that one is to acquire should be determined, to a large extent, by the quarters in which the animal is to be kept. Generally speaking, small apartments or quarters in crowded cities are unfavorable for any animal, for there is no opportunity for exercise. Large, active young dogs require spacious facilities for exercise, and they thrive best in the open. A dog that is chosen as a child's companion should possess an invariably good disposition. Moreover, it should not be too enthusiastic at play lest the child be accidentally injured. In order to achieve such a desirable result, the dog should be competently trained from puppyhood. In general, females are considered much more intelligent than males, and they are also more gentle with children.

¹¹ Barnes, M. F., Metcalfe, A. N., Martindale, W. E., and Lens, W. J.: Canine Rabies Experimental Vaccination. *Jour. Am. Veterinarian Assoc.*, 37: 740, May 1934.

¹² Many of the points mentioned have received attention in a radio lecture entitled "The Dog's Bill of Rights." Upon request a mimeographed copy of this lecture will be mailed, without cost, by the Bureau of Health Education, Department of Health, 139 Centre Street, New York City.

The purebred dog possesses no particular advantage over the dog of mixed breeding; and, unfortunately, because of unscientific and ill-advised mating, too many pure breeds have degenerated both mentally and physically. Some of these pedigreed animals are unsuited for companionship in the home. If, despite appropriate advice to the contrary, a person insists upon acquiring a dog, it should be known that, first of all, a capable veterinarian should be employed to determine whether the animal is in good health. Furthermore, advice should be regularly sought concerning diet, training, and current health problems.

A surly and unfriendly animal, unable to distinguish between friends and foes, is certainly a menace and should be destroyed. Likewise, a vicious animal, and there are many of them, should have no place in a civilized community. It is unfortunate that sentiment has blinded many dog owners and humane societies to the true facts of the rabies problem. If dogs were given reasonable consideration and care, as befits their peculiarities when living in close proximity to human beings, it is conceivable that bites would be fewer, that the need for antirabic prophylaxis would be lessened, and that expenditures of money and effort by public-health workers would be materially reduced.

Bites in relation to breeds.—From statistical compilations and extended observations by the veterinarians of the department of health it has become apparent that some breeds of dogs are more prone to bite than others. However, in presenting a list of the breeds most frequently charged with biting it is realized that certain inaccuracies and misinterpretations may be present. For instance, because of the popularity of a given breed, many such animals may be present in a community. Unless the exact percentage of biting dogs of each breed is known in relation to the total number of such animals the results may not be strictly comparable nor may definite conclusions be drawn.

The training and environment of dogs undoubtedly plays a considerable part in the infliction of bites. Therefore, in presenting a tentative list of the frequency with which bites are ascribed to certain breeds of dogs, due reservations should be made. The order in which biting dogs are listed, in order of greatest frequency, is as follows: German police, chow, poodle, Italian bull, fox terrier (crossed), chow (crossed), airedale, pekinese, German police (crossed).

This list suggests that some breeds of dogs bite more frequently than others. Furthermore, if bites are to be reduced in number, some attention should be directed to the selection of animals that may be presumed, on the basis of statistical evidence and experience, to bite less frequently. The application of this information may tend to safeguard human beings and animals against dogs known to bite.

5. CONCLUSION

Heretofore reliance in the control of rabies has unwisely and almost exclusively been placed in regulations which were difficult of enforcement. Future action, to be effective, must embrace educational efforts, primarily involving the dog owner but also extending to the general public. It is also to be hoped that success may be reached in preparing an effective vaccine against canine rabies.

Inasmuch as the muzzling of dogs, as a practical measure, is attended by difficulties, while leashing as a substitute is now on trial, the responsibility for bites should be placed squarely upon each dog owner. In any event, a city should be fully compensated for its financial outlay in preventing human and canine rabies. An adequate program includes persistent, all-year effort in ridding the community of stray and unlicensed animals. For this purpose a sufficiently large individual dog tax should be imposed.

The writer believes that each person bitten should receive compensation, whether the bite is provoked or unprovoked. A dog bite, frequently involving pain, fright, torn clothing, a doctor's bill, and sometimes hospital treatment, is a distressing experience. Moreover, a course of prophylactic injections is an ordeal, particularly for children. If the owners of biting dogs were sufficiently penalized, there would be a marked and rapid reduction in occurrences.

HEIGHT AND WEIGHT OF CHILDREN OF THE DEPRESSION POOR¹

Health and Depression Studies No. 2

By CARROLL E. PALMER, M. D., *Consultant in Child Hygiene, United States Public Health Service*²

During the past few years conflicting reports have appeared concerning the effects of the present economic depression on the growth of children. Eliot and Burritt (1) have collected data which seem to show that there has been a significant increase of malnutrition in children in New York, Philadelphia, Detroit, and other large cities; Kiser and Stix (2), on the basis of measurements of 540 children from the lower east side in New York, believe that a definite deterioration

¹ From the Offices of Field Investigations in Child Hygiene and Statistical Investigations, U. S. Public Health Service, the Division of Research, Milbank Memorial Fund, and the Department of Biostatistics (Paper No. 203) of the School of Hygiene and Public Health, the Johns Hopkins University.

This is the second of a series of papers on sickness and medical care in relation to income, unemployment, and other related economic factors among groups of white wage-earning families. The first paper of the series is *Relation of Sickness to Income and Income Change in 10 Surveyed Communities*, by G. St. J. Perrott and Selwyn D. Collins. (See reference no. 9 at the end of this article.)

Earlier preliminary papers giving results for parts of the surveyed group are listed in the first paper in this series.

² The writer wishes to acknowledge the assistance of S. D. Collins, G. St. J. Perrott, and W. M. Gafner, all of the U. S. Public Health Service.

of physical well-being has occurred in the children of the very poor, and Kerr (3) and Jacobs (4), summarizing conditions in Pennsylvania, found an increasing proportion of children to be 10 or more percent underweight in successive years from 1928 to 1932.

Opposed to the views of these workers are those of Warner, Emerson, and others (5), who have pointed out that malnutrition is a perennial problem, that no adequate method has yet been devised for estimating malnutrition, and that great care must be exercised against drawing hasty conclusions from the scanty data now available. These opinions are given some support in recent papers by the writer (6, 7) where it is stated that no reduction was found to be clearly evident in the actual weights or yearly weight increments of school children of Hagerstown, Md., a representative small city.

In a large measure these opposing conclusions may be presumed to be due to many factors. First, it is clear that there must be recognizable differences in the possible effects of changed economic conditions in different parts of the country; especially it may be postulated that the changes which have occurred in the large metropolitan centers may not be comparable with those in the smaller urban and rural localities. Second, it must be equally clear that certain strata of the population may have been affected seriously by the recent economic disturbances and that others may have been relatively unaffected. In view of the importance of these presumably influential factors it has seemed desirable to attempt a study of the problem for particular population groups, and for specific economic classes. It is the purpose of this paper, therefore, to present the results of an investigation limited to children living primarily in large metropolitan areas for whom it has been found possible to collect data concerning their economic status during the past 4 years.

Material for the study comes from two sources: First, data on economic status collected in a survey, made jointly by the United States Public Health Service and the Milbank Memorial Fund, of approximately 1,000 families in each of the 6 cities, Baltimore, Birmingham, Cleveland, Greenville, S. C., Pittsburgh, and Syracuse; and second, seriatim measurements, which were transcribed from school records, of the height and weight of children from the surveyed families.

Details relating to the selection of the families interviewed, the facts obtained, and the general results of the various analyses have been reported in recent papers (8, 9). It will be sufficient to state here, therefore, that data were available for the classification of approximately 5,000 more or less typical working-class urban families according to their economic status during the period 1929-33. For the purposes of the present study these families were grouped into three classes: (1) Those which remained relatively comfortable, that is,

whose income equaled \$250 or more per capita per year throughout the 4-year period 1929-33; (2) those which remained relatively poor, that is, whose income was less than \$250 per capita per year through the period; and (3) those which changed from a relatively comfortable to a poor economic status, or those families whose income dropped from more than \$250 per capita per year to less than \$250. Of the total of nearly 5,400 children, approximately 15 percent constituted the first class, 40 percent the second class, and nearly one-half made up the class which may be designated as the "depression poor."

The measurements from the yearly school records included all of the available records of height and weight made each school year from 1928-29 to 1932-33. Obviously it was impossible to find complete 5-year records of height and weight for all of the children in these families, but in the total of nearly 5,000 families about 10,000 weighings and the same number of measurements of height had been recorded for approximately 5,400 children. Of the 10,000 measurements transcribed, approximately 3,200 were made in the school year 1932-33, 2,800 were made in 1931-32, 2,100 in 1930-31, 1,100 in 1929-30, and 800 in 1928-29. The measurements were nearly equally divided between the sexes, and the age range included the sixth through the fourteenth year.

The method of analyzing the data, which was alike for both height and weight, is, briefly, as follows: The first step in the analysis (of weight) consisted in the calculation of the average weight of children of given age and sex regardless of the year in which the measurement was made and regardless of the economic status of the families from which the children came. In this way an average, or standard, weight was calculated for each age and sex class. Let this type of average be designated A. The next step consisted in subdividing each age-sex class of children into subclasses *according to the year in which the measurement was taken and according to the economic history of the family*. Average weight then was calculated for children of each age in each of these subclasses. This type of average is designated B.

Ratios of the form $\frac{100 B}{A}$ were then calculated.

An example will make the foregoing clear. Consider the B average first. In the total series of measurements the weights of 749 seven-year old boys were copied from the school records. Of this total of 749 individuals, 205 were for boys 7 years of age in 1932-33, 160 were for boys 7 years of age in 1931-32, 151 were for boys of that age in 1930-31, 136 for 7-year old boys in 1929-30, while 97 were for 7-year olds in 1928-29. Each of these 5 groups of 7-year old boys was separated according to the 3 classes of economic history, (1) those whose families remained comfortable throughout the 5-year period, (2) those whose families remained poor, and (3) those whose

families were comfortable in 1929 and who by 1933 had become poor. The next step consisted in the calculation of the average weight of the boys in each of the 15 subclasses and, as well, the average weight (A) of all 749 boys. For example, there were 37 boys 7 years of age in 1932-33 who came from families which remained poor during the interval from 1928-33. The average weight (B) of these 37 boys was 47.78 pounds; the average weight (A) of all 749 boys equaled 48.92 pounds. The *relative weight* of the 7-year old boys in 1932-33 who came from families poor throughout the entire period equals, therefore, $47.78/48.92$ or 97 percent. In this way 15 ratios, or relative weights, were determined for each of the separate age-sex subclasses, that is, for each age-sex group there was calculated a relative weight to represent each of the 3 economic classes for each of the 5 school years.

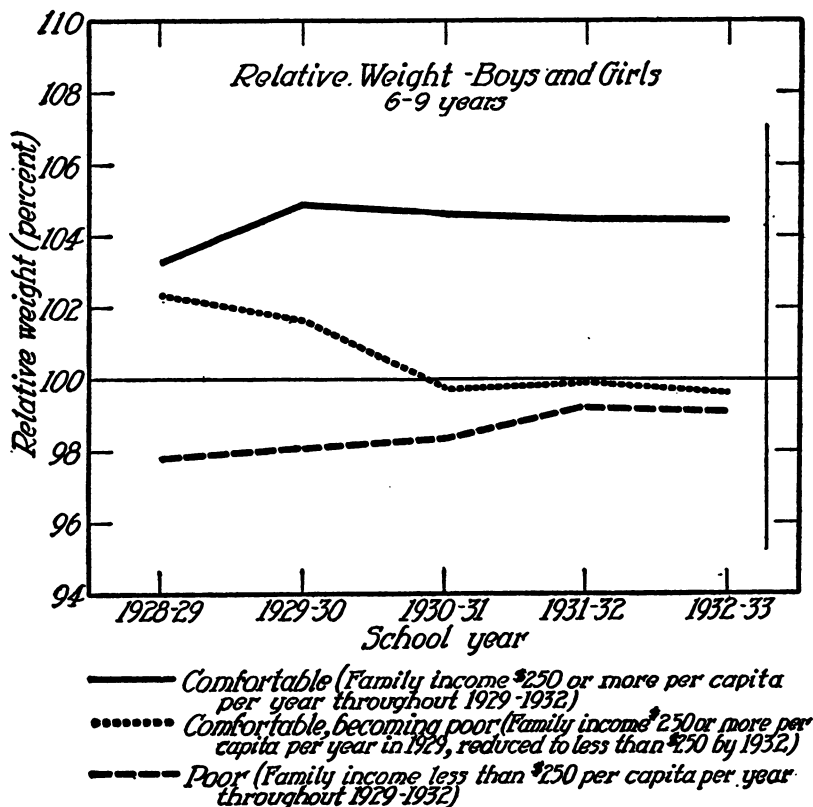
When the weights of children in the different time-history subclasses are thus expressed as ratios or relative weights it becomes feasible, for practical purposes, to combine or average the ratios for various age-sex classes, *specific for economic status and year of measurement*. The final step in the analysis consisted, therefore, in summarizing the data for each economic class of each school year by calculating the weighted average of the relative weights for the two sexes for broad age groups.

Again, a specific example will indicate the kind of result obtained. Thus, 777 boys and girls from 6 through 9 years of age who were weighed in 1932-33, and who were from families that remained poor throughout the period 1929-33, are represented by the single average relative weight, 99.1 percent; 284 boys and girls 6 through 9 years of age measured in 1932-33, who were from families that remained comfortable throughout, are represented by the figure 104.4 percent, and 780 boys and girls 6 through 9 years of age in the same year who were from families that were comfortable in 1929 but who became poor by 1932 are represented by 99.6 percent.

In reporting the results of the analysis it may be stated at the outset that only those data which showed positive results will be given. Accordingly, table 1 and figure 1 give the results of the study of body weight for the two sexes combined for the age group 6 through 9 years. For this group of children a definite relationship between *change* in economic status and body weight was found. No relationships pertinent to the present discussion were found for the weights of children 10 years and above nor for the heights of children at any of the ages studied, and it is considered unnecessary at this time to report the results of the analysis.

TABLE 1.—*Relative weight of children, both sexes, 6 through 9 years of age, according to economic class and year of measurement 1928-29 to 1932-33*

School year	Economic class					
	Comfortable throughout (above \$250 per capita per year from 1929 to 1933)		Changed from comfortable to poor (above \$250 per capita per year in 1929, dropping below \$250 by 1933)		Poor throughout (below \$250 per capita per year from 1929 to 1933)	
	Number of children	Relative weight	Number of children	Relative weight	Number of children	Relative weight
		Percent		Percent		Percent
1928-29.....	33	103.3	87	102.3	84	97.8
1929-30.....	87	104.9	219	101.6	249	98.1
1930-31.....	138	104.6	384	99.8	404	98.3
1931-32.....	231	104.3	562	99.9	604	99.2
1932-33.....	284	104.4	780	99.6	777	99.1

**FIGURE 1.**—Relative weights of children 6 through 9 years of age according to economic history of their families during 1929-32.

In figure 1 it will be seen, despite some irregular fluctuations, due probably to the smallness of the number of cases, that the average weight of children from the continuously comfortable families is approximately 4 percent greater than the average weight of all

children taken together; that the relative weight of children from the poor families is roughly 1 to 2 percent below the weight of all children and that the relative weight of children from recently poor families takes an intermediate position between the other two economic groups. While differences between the weights of children from different economic classes are well known (10), particular attention may be directed to the *trends* of the lines over the 5-year period. Thus it may be seen that the line representing the economically comfortable group remained practically horizontal throughout the 5-year period; that the line representing the economically poor children is inclined slightly upward; while the line representing the children of the depression poor is inclined definitely downward.

In interpreting the inclination of these lines it must be remembered that the method of analysis employed is such that if there were no time changes in the relative size of children in the different economic classes the lines would not deviate significantly from a horizontal position. Another important point, also, is that, if the relative weight of children in one economic class does show a time trend, that trend may be reflected by an opposite trend in one or both of the other lines. The significant finding for this study is that the line representing the depression poor exhibits a definite downward trend during the 5-year period. In 1928-29, which represents the school year preceding the beginning of the economic depression, children in families that were relatively comfortable but who were destined to become poor during the next 5 years showed very nearly the same relative weight as children from families who were to remain fairly comfortable through the following 5 years. Furthermore, the weight of children in the former group was considerably greater, on the relative scale, than that of children of the poor in 1929. By 1932-33 the weight of children from families that had become poor during the depression had fallen considerably below the weight of children from the continuously comfortable families and was then approximately the same as the weight of children from the continuously poor families. The interpretation which may be placed on this finding is, therefore, that children 6 through 9 years of age from the recently poor families did not maintain the same relative growth as did the children in the group as a whole. The extent to which the recently poor children failed to gain as much as children from the other economic classes obviously is small. Thus the line representing the new poor children drops during the 5-year period from a little more than 102 percent to slightly below 100 percent.

Viewed broadly, this finding is in agreement with, and extends in some particulars, those presented in other reports of the general depression study of which this paper forms a part. Thus Perrott, Collins, and Sydenstricker (8), and Perrott and Collins (9) have

shown that the incidence of illness is highest in families of the depression poor. The present study now indicates that the growth in weight of children 6 through 9 years of age from these families has been slightly but definitely reduced as compared with the growth of children of these ages in the group as a whole. Thus, while some workers have accepted such views as certain on *a priori* grounds, these studies now give quantitative evidence that, so far as the wage-earning class in the large urban centers is concerned, it is the children from families whose economic status has markedly *changed* that have been influenced by the depression.

SUMMARY

This study deals with the relative change in height and weight, during 1929 to 1933, of urban children from (1) families that remained in comfortable economic circumstances during the entire period, (2) families that remained poor, and (3) families that were comfortable in 1929 but who had become poor by 1933. It is shown that young children from families that had become poor, failed by approximately 2 percent to attain the weight of children in the group as a whole. The conclusion is drawn, so far as growth in weight of this sample of children from urban wage-earning families is concerned, that it is children from families *whose income has fallen to a low level* who have been affected by the economic depression.

REFERENCES

- (1) Eliot, Martha M., and Burritt, Bailey B.: (July 12, 1933) Some effects of the depression on the nutrition of children. Child-Welfare News Summary, Children's Bureau, U. S. Dept. of Labor, Washington, D. C.
- (2) Kiser, Clyde V., and Stix, Regine K.: (1933) Nutrition and the depression. The Milbank Memorial Fund Quarterly Bulletin, vol. 11, pp. 299-307.
- (3) Kerr, Allen M.: (1933) The effect of the economic crisis on the nutrition of school children. Pa. Med. Jour., vol. 37, pp. 232-234.
- (4) Jacobs, Esther: (1933) Is malnutrition increasing? Amer. Jour. Pub. Health, vol. 23, pp. 784-788.
- (5) Proceedings of Child Health Recovery Conference, October 6, 1933. Children's Bureau, U. S. Dept. of Labor, Washington, D. C.
- (6) Palmer, C. E.: (1933) Growth and the economic depression. A study of the weight of elementary school children in 1921-27 and in 1933. Pub. Health Rep., vol. 48, pp. 1277-1292.
- (7) Palmer, C. E.: (1934) Further studies on growth and the economic depression. Pub. Health Rep., vol. 49, pp. 1453-1469.
- (8) Perrott, G. St. J., Collins, Selwyn D., and Sydenstricker, Edgar: Sickness and the economic depression—Preliminary report on illness in families of wage earners in Birmingham, Detroit, and Pittsburgh. Pub. Health Rep., vol. 48, pp. 1251-1264.
- (9) Perrott, G. St. J., and Collins, S. D.: Relation of sickness to income and income change in 10 surveyed communities. Health and Depression Studies No. 1. Method of study and general results for each locality. Pub. Health Rep., vol. 50, pp. 595-622.

- (10) Paton, D. N., and Findlay, L.: (1926) Poverty, nutrition and growth. Medical Research Council, Special Report Series, No. 101. His Majesty's Stationery Office, London.
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A SURVEY OF TUBERCULOSIS IN LOUISIANA

A report on a survey of tuberculosis in Louisiana has recently been published by the Public Health Service.¹ The survey comprised (1) the collection and collation of mortality and morbidity statistics from the records of the State and of the local (city and parish) official health agencies, and of the National, the State, and the local tuberculosis associations, and of the United States Census Bureau; (2) the detailed inspection of parishes in different parts of the State to compare local conditions thought likely to influence the incidence of tuberculosis; (3) visits to hospitals and other institutions in Louisiana engaged in whole or in part in the care and treatment of persons afflicted with tuberculosis; (4) interviews with State and local health officials and their assistants, with officers of National, State, and local tuberculosis and public health associations and with numerous other persons especially interested in the problem; and (5) a considerable study of available literature on the general epidemiological features of tuberculosis in Louisiana and elsewhere.

The report presents by text, tables, charts, and maps detailed data regarding the area, topography and character of land, the climate, the population, the resources and industries, the general health, and the incidence of tuberculosis in the State. The hospitals and other institutions in the State which are engaged in whole or in part in the care and treatment of patients with tuberculosis are described, and the State and local agencies engaged in work for the prevention or control of tuberculosis are discussed. The standing of Louisiana in tuberculosis mortality is compared with that of the other States in the United States registration area. The distribution of tuberculosis mortality in Louisiana by age, sex, race, and geographical regions is presented in detail.

Among the findings were the following:

1. Less than 25 percent of the cases of active tuberculosis in Louisiana are diagnosed and officially reported and, therefore, the mortality records furnish the most reliable means now available for the determination of the incidence of the disease in this State.

2. When the death rates for whites and Negroes are considered separately, the tuberculosis situation in Louisiana compares favorably, both in prevalence and in decrease in rate in recent years, with that of a majority of the other States.

¹ A survey of tuberculosis in Louisiana. By L. L. Lumsden. Pub. Health Bull. No. 219. Government Printing Office, Washington, 1935.

3. In Louisiana the tuberculosis death rate among the Negroes is nearly three times that among the white and, for the total population over 20 years of age, is much higher among the Negro males than among the Negro females and among the white males than among the white females.

4. In Louisiana the tuberculosis death rate in the urban population is much higher than that in the rural population.

5. There is in this State a regional distribution of tuberculosis mortality which is not satisfactorily explicable by our present knowledge of the epidemiology of the disease.

The following are among the conclusions reached:

1. Poverty and crowding appear to be associated in a causal relationship with high tuberculosis incidence in Louisiana, but these factors alone do not account for the regional and the age-sex-race distributions of the disease.

2. In view of some of the phases of the general tuberculosis situation which Louisiana was found to exemplify in a striking manner, there is need for much research work to bring to a practical basis our knowledge of the causation, of the modes of spread, of the care and treatment, and of the measures for the prevention of tuberculosis.

3. The institutional provisions for the care and treatment of patients and the agencies engaged in carrying out specific measures for the prevention of tuberculosis are far from adequate—and much less nearly adequate than in a number of other States in which, however, the decline in the tuberculosis death rate in the last 15 or 20 years has been no greater than that in Louisiana.

4. Among the measures which should be carried out in Louisiana for the prevention of tuberculosis and for the care and treatment of persons afflicted with the disease are, in order of importance (a) the augmentation of existing whole-time parish and city health units, or departments, and the establishment of additional units, all to be organized on a basis of thorough efficiency and to be sufficiently financed to enable them to carry out in every parish provided with their service a reasonably adequate program of general health service, including in due proportion specific justifiable measures for the control of tuberculous infection; (b) the establishment in the State board of health of a tuberculosis field service for diagnostic and educational work; and (c) augmentation and reorganization of existing provisions for institutional care and treatment of patients with tuberculosis.

It is believed that this report will prove of especial interest to administrative health officials, to antituberculosis agencies, and to students of epidemiology.

COURT DECISION ON PUBLIC HEALTH

Refusal of city health department to grant permit to sell and distribute milk and milk products in city set aside.—(New Jersey Supreme Court; *Sheffield Farms Co., Inc., v. Seaman, Director of Finance, et al.*, 177 A. 372; decided Feb. 23, 1935.) The plaintiff company applied to the health authorities of the city of Perth Amboy for a permit to sell and distribute its milk and milk products in the said city. The company held a license from the State health department authorizing it to sell and distribute milk in the State. Notwithstanding the fact that the company had done all that it was obliged to do under the State and local laws and regulations, it was refused a permit on the following grounds:

(1) That there is already an adequate supply of milk in the city of Perth Amboy for its inhabitants; (2) that the health bureau has the control and regulation of the milk supply well in hand and the assumption by it of any additional burden would embarrass the carrying out of the present system of regulation and control; (3) that the health bureau has a limited budget and it has not sufficient moneys on hand with which to inspect additional sources of supply at distant points; (4) that the health inspectors of the bureau of health have as much work to do as is physically possible for them to undertake; that, if they are required to inspect any additional sources of supply, it will hamper them in adequately checking and keeping under control the present source of supply; (5) that the people would not be benefited by any additional supply of milk at a price fixed by the milk control board of the State of New Jersey; (6) that the granting of a license to the applicant would bring about a surplus supply of milk, which may prove a menace to health and a nuisance to the public; (7) the business of distributing and selling milk is a privilege by reason of the nature of the product and not a right.

In a proceeding to review the city health department's action, the company contended substantially "that to sell milk is a property right which is not to be denied it in an arbitrary manner; and that the denial was arbitrary, unjust, and a denial of its constitutional rights to engage in that business; and that the refusal to grant the permit is also a denial of the equal protection of the laws guaranteed it under the Federal Constitution."

The supreme court said that in *Nebbia v. New York*, decided by the United States Supreme Court, it was held that the milk business was affected with a public interest and was subject to regulation. "That regulation, however," said the court, "still has to be reasonable; it must not be arbitrary, capricious, or discriminatory. And that reasonableness, and hence the validity of a business, depends on the facts."

As to the contention that the refusal was based on a sound discretion lodged in those possessing the power to grant the permit, the court said that this was not so. "There is no such discretion in the granting power in the premises. Moreover, even if such an unrea-

sonable, arbitrary, and capricious discretion were delegated or vested in the granting power, it would be illegal."

Respecting the points that the permit was refused in order to conserve public health and safety and that the city was without funds to inspect and supervise the sources of the company's milk supply, it was said:

Here, again, the argument finds no support in the record of the stipulated facts. Respondents concede that they have no knowledge respecting the quality of prosecutor's milk and milk products, or the sanitary condition under which its milk is produced, handled, or marketed. It clearly could not, therefore, form a judgment of refusal to grant the permit on unknown or undetermined facts. Nor does the mere lack of funds to investigate the facts justify the refusal. The legislature has provided for such a contingency. * * *

The court closed its opinion with the following language:

It will serve no useful purpose to answer or further discuss the purported reason argued upon which the refusal is sought to be justified. Suffice it to say that the meager facts, relevant as to the occasion and history of the refusal, lead us to the conclusion that they are without substance. They are excuses rather than legal reasons. The city just took the position that it had enough milk dealers and that it had the situation "well in hand." Such a position is unreasonable; it is arbitrary, capricious, and discriminatory. It unlawfully curtails prosecutor's common-law right to engage in a lawful business, notwithstanding that it has fully complied with the requirements of the State and city. This the city cannot lawfully do.

The refusal is set aside, with costs.

DEATHS DURING WEEK ENDED JULY 27, 1935

[From the Weekly Health Index, issued by the Bureau of the Census, Department of Commerce]

	Week ended July 27, 1935	Correspond- ing week, 1934
Data from 86 large cities of the United States:		
Total deaths.....	7,298	8,852
Deaths per 1,000 population, annual basis.....	10.2	12.3
Deaths under 1 year of age.....	478	590
Deaths under 1 year of age per 1,000 estimated live births.....	44	55
Deaths per 1,000 population, annual basis, first 30 weeks of year.....	11.9	11.9
Data from industrial insurance companies:		
Policies in force.....	67,492,296	67,640,101
Number of death claims.....	12,671	12,398
Death claims per 1,000 policies in force, annual rate.....	9.7	9.6
Death claims per 1,000 policies, first 30 weeks of year, annual rate.....	10.2	10.4

PREVALENCE OF DISEASE

No health department, State or local, can effectively prevent or control disease without knowledge of when, where, and under what conditions cases are occurring

UNITED STATES

CURRENT WEEKLY STATE REPORTS

These reports are preliminary, and the figures are subject to change when later returns are received by the State health officers

Reports for weeks ended Aug. 3, 1935, and Aug. 4, 1934

Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended Aug. 3, 1935, and Aug. 4, 1934

Division and State	Diphtheria		Influenza		Measles		Meningococcus meningitis	
	Week ended Aug. 3, 1935	Week ended Aug. 4, 1934	Week ended Aug. 3, 1935	Week ended Aug. 4, 1934	Week ended Aug. 3, 1935	Week ended Aug. 4, 1934	Week ended Aug. 3, 1935	Week ended Aug. 4, 1934
New England States:								
Maine.....	1				51	3	0	0
New Hampshire.....					1	21	0	0
Vermont.....		1			20	7	0	0
Massachusetts.....	10	3			65	46	3	0
Rhode Island.....	2				22	10	1	1
Connecticut.....	2	2	1		35	32	1	0
Middle Atlantic States:								
New York.....	22	24	11	12	395	174	12	2
New Jersey.....	12	5	1	2	102	59	4	0
Pennsylvania.....	18	33			132	535	4	5
East North Central States:								
Ohio.....	16	13	3	1	79	46	4	1
Indiana.....	14	12	17	14	10	23	3	0
Illinois.....	31	20	5	2	89	138	10	9
Michigan.....	6	2	2		199	47	1	1
Wisconsin.....	2	2	23	11	440	176	1	0
West North Central States:								
Minnesota.....	1	3	2		18	27	2	0
Iowa.....	2	2	2		8	10	1	0
Missouri.....	11	10	27	3	30	14	4	1
North Dakota.....	3	12			2	10	0	1
South Dakota.....	1				5	13	0	0
Nebraska.....	1	13			21	9	0	0
Kansas.....	5	4	2		16	15	3	0
South Atlantic States:								
Delaware.....	1				8		0	0
Maryland.....	1	3	1	45	16	29	3	0
District of Columbia.....	8	6			3	3	5	1
Virginia.....	12	6			21	56	2	1
West Virginia.....	8	5	42	53	11	31	2	1
North Carolina.....	15	14		1	4	47	3	1
South Carolina.....	3	4	45	70	3	15	1	0
Georgia.....	6	8					0	1
Florida.....	4	7				25	0	0

See footnotes at end of table.

*Cases of certain communicable diseases reported by telegraph by State health officers
for weeks ended Aug. 3, 1935, and Aug. 4, 1934—Continued*

Division and State	Diphtheria		Influenza		Measles		Meningococcus meningitis	
	Week ended Aug. 3, 1935	Week ended Aug. 4, 1934	Week ended Aug. 3, 1935	Week ended Aug. 4, 1934	Week ended Aug. 3, 1935	Week ended Aug. 4, 1934	Week ended Aug. 3, 1935	Week ended Aug. 4, 1934
East South Central States:								
Kentucky.....	3	23			23	50	1	3
Tennessee.....	10	7	4	13	13	21	1	2
Alabama.....	13	19	2	3	1	59	0	0
Mississippi.....	10	6					1	1
West South Central States:								
Arkansas.....	7	2	5	1	9		2	0
Louisiana.....	17	6	18	2	4	10	1	0
Oklahoma.....	8	3	10				1	0
Texas.....	31	47	14	22	19	50	0	1
Mountain States:								
Montana.....	4			4	17	10	0	0
Idaho.....							0	0
Wyoming.....					7		0	0
Colorado.....	9	4			104	48	0	2
New Mexico.....	1	3		1		10	0	1
Arizona.....	1		1	1	1	1	0	0
Utah.....				1		4	0	0
Pacific States:								
Washington.....		1			27	18	1	0
Oregon.....	2		11	7	47	7	2	0
California.....	14	24	9	17	148	86	1	2
Total.....	348	357	248	278	2,226	2,004	81	37
First 31 weeks of year.....	17,317	19,630	103,499	47,696	693,097	665,401	4,027	1,537

Division and State	Pollomyelitis		Scarlet fever		Smallpox		Typhoid fever	
	Week ended Aug. 3, 1935	Week ended Aug. 4, 1934	Week ended Aug. 3, 1935	Week ended Aug. 4, 1934	Week ended Aug. 3, 1935	Week ended Aug. 4, 1934	Week ended Aug. 3, 1935	Week ended Aug. 4, 1934
New England States:								
Maine.....	2	1	3	7	0	0	4	3
New Hampshire.....	0	0	2	6	0	0	0	0
Vermont.....	0	2	5	6	0	0	0	0
Massachusetts.....	47	5	35	51	0	0	5	3
Rhode Island.....	7	0	3	1	0	0	0	0
Connecticut.....	10	1	8	4	0	0	0	3
Middle Atlantic States:								
New York.....	104	6	78	97	0	0	11	10
New Jersey.....	7	1	14	23	0	0	2	7
Pennsylvania.....	2	7	75	128	0	0	13	29
East North Central States:								
Ohio.....	1	3	54	59	0	0	31	54
Indiana.....	0	2	14	16	0	0	25	18
Illinois.....	10	10	95	70	0	0	52	51
Michigan.....	10	8	56	60	0	0	19	6
Wisconsin.....	0	2	87	44	6	3	0	9
West North Central States:								
Minnesota.....	1	6	34	14	1	0	27	2
Iowa.....	0	0	14	8	3	0	2	26
Missouri.....	2	0	16	9	0	2	34	59
North Dakota.....	0	0	4	4	0	0	2	2
South Dakota.....	0	1	5	2	6	1	0	2
Nebraska.....	0	0	4	9	3	2	1	4
Kansas.....	0	2	23	17	0	0	20	22
South Atlantic States:								
Delaware.....	0	0	1		0	0	2	1
Maryland.....	10	2	13	12	0	0	14	13
District of Columbia.....	7	1	4	3	0	0	3	2
Virginia.....	100	3	14	18	0	0	38	36
West Virginia.....	0	1	18	21	0	0	31	32
North Carolina.....	40	3	20	16	0	0	40	44
South Carolina.....	1	0	1		0	0	31	38
Georgia.....	1	1	4	1	0	0	36	44
Florida.....	0	0		2	0	0	21	5

See footnotes at end of table.

Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended Aug. 3, 1935, and Aug. 4, 1934—Continued

Division and State	Pollomyelitis		Scarlet fever		Smallpox		Typhoid fever	
	Week ended Aug. 3, 1935	Week ended Aug. 4, 1934	Week ended Aug. 3, 1935	Week ended Aug. 4, 1934	Week ended Aug. 3, 1935	Week ended Aug. 4, 1934	Week ended Aug. 3, 1935	Week ended Aug. 4, 1934
East South Central States:								
Kentucky.....	18	4	16	23	0	0	55	80
Tennessee.....	10	3	16	16	0	0	55	71
Alabama ¹	1	5	9	10	0	0	12	65
Mississippi ²	1	0	5	11	0	0	13	20
West South Central States:								
Arkansas.....	1	0	8	1	0	0	42	21
Louisiana.....	2	2	7	9	0	0	24	19
Oklahoma ³	0	0	8	6	0	1	44	57
Texas ⁴	3	6	17	38	0	9	70	95
Mountain States:								
Montana ⁵	0	10	2	3	2	0	2	4
Idaho.....	0	17	2	1	3	0	0	1
Wyoming ¹	0	0	5	3	2	0	1	0
Colorado.....	1	1	22	20	0	0	4	1
New Mexico.....	0	1	3	3	0	0	14	11
Arizona.....	0	5	2	—	0	0	4	2
Utah ¹	0	1	9	2	0	0	0	1
Pacific States:								
Washington.....	0	41	10	9	6	4	2	5
Oregon.....	0	1	10	18	2	0	1	0
California.....	19	85	50	66	2	0	10	3
Total.....	418	250	905	947	36	22	822	981
First 31 weeks of year.....	2, 316	3, 430	178, 553	146, 358	5, 257	3, 708	7, 787	9, 236

¹ New York City only.

² Rocky Mountain spotted fever, week ended Aug. 3, 1935, 19 cases, as follows: Pennsylvania, 1; Maryland, 7; Virginia, 3; Montana, 6; Wyoming, 2.

³ Week ended earlier than Saturday.

⁴ Typhus fever, week ended Aug. 3, 1935, 40 cases, as follows: Maryland, 1; Virginia, 2; North Carolina, 2; Georgia, 16; Alabama, 9; Texas, 10.

⁵ Exclusive of Oklahoma City and Tulsa.

SUMMARY OF MONTHLY REPORTS FROM STATES

The following summary of cases reported monthly by States is published weekly and covers only those States from which reports are received during the current week.

State	Menin- gococ- cus menin- gitis	Diph- theria	Influ- enza	Malaria	Measles	Pel- lagra	Polio- mye- litis	Scarlet fever	Small- pox	Ty- phoid fever
<i>June 1935</i>										
California.....	22	136	117	4	4, 534	16	90	698	50	41
Mississippi.....	3	18	563	7, 801	130	693	3	27	2	49
North Dakota.....	3	6	11	—	97	—	0	129	2	4
Virginia.....	38	32	150	13	1, 171	36	52	91	0	59

<i>June 1935</i>		<i>Jun: 1935—Continued</i>		<i>June 1935—Continued</i>	
Actinomycosis:	Cases	Epidemic encephalitis:	Cases	Leprosy:	Cases
California.....	2	California.....	2	California.....	2
Chicken pox:		North Dakota.....	1	Mumps:	
California.....	2, 689	Food poisoning:		California.....	945
North Dakota.....	89	California.....	173	Mississippi.....	551
Virginia.....	232	German measles:		North Dakota.....	3
Dysentery:		California.....	2, 410	Virginia.....	304
California (amoebic)...	15	Granuloma, coccidioidal:		Ophthalmia neonatorum:	
California (bacillary)...	14	California.....	2	California.....	1
Mississippi (amoebic)...	117	Hookworm disease:		Paratyphoid fever:	
Mississippi (bacillary)...	1, 616	California.....	6	California.....	4
Virginia (bacillary and diarrhea).....	800	Mississippi.....	378	North Dakota.....	2
				Virginia.....	2

June 1935—Continued		June 1935—Continued		June 1935—Continued	
Puerperal septicemia:	Cases	Tetanus:	Cases	Undulant fever:	Cases
Mississippi.....	18	California.....	7	California.....	18
Rabies in animals:		Trachoma:		North Dakota.....	1
California.....	94	California.....	5	Virginia.....	7
Mississippi.....	7	Mississippi.....	7	Vincent's infection:	
Relapsing fever:		Virginia.....	6	North Dakota.....	8
California.....	1	Trichinosis:		Whooping cough:	
Rocky Mountain spotted fever:		California.....	2	California.....	646
California.....	5	Tularaemia:		Mississippi.....	865
North Dakota.....	1	California.....	3	North Dakota.....	64
Virginia.....	5	Virginia.....	4	Virginia.....	454
Septic sore throat:		Typhus fever:			
California.....	42	Virginia.....	1		
Virginia.....	10				

MENINGO-ENCEPHALITIS IN WINDBER, PA.

According to a report dated August 5, 1935, about 100 cases of meningo-encephalitis, with 1 death, chiefly in children and young adults, had been reported in a population of about 10,000 in Windber, Pa., since July 21. The cases were with few exceptions mild, with transient headache, fever, and increased cell count in the spinal fluid when lumbar puncture was performed. Only 19 patients had been hospitalized. In 13 families there were 2 cases each, with onsets in most instances either on the same day or a day apart. There were no cases of poliomyelitis in the community. The disease was said not to resemble the St. Louis outbreak of encephalitis in age distribution, cerebral symptoms, or severity. Similar cases, fewer in number, were reported to have occurred in other neighboring localities in southwestern Pennsylvania. No association with water, milk, or ice-cream supply, or with insects, was made out.

WEEKLY REPORTS FROM CITIES

City reports for week ended July 27, 1935

This table summarizes the reports received weekly from a selected list of 140 cities for the purpose of showing a cross section of the current urban incidence of the communicable diseases listed in the table. Weekly reports are received from about 700 cities, from which the data are tabulated and filed for reference.

State and city	Diphtheria cases	Influenza		Measles cases	Pneumonia deaths	Scarlet fever cases	Small-pox cases	Tuberculosis deaths	Typhoid fever cases	Whooping cough cases	Deaths, all causes
		Cases	Deaths								
Maine:											
Portland.....	0	0	0	1	0	0	0	1	0	0	22
New Hampshire:											
Concord.....	0	0	0	0	0	0	0	0	0	0	10
Manchester.....	0	0	0	0	0	1	0	2	0	0	13
Nashua.....	0	0	0	0	0	0	0	0	0	0	-----
Vermont:											
Barre.....	0	0	0	10	0	0	0	4	0	1	5
Burlington.....	0	0	0	0	0	0	0	0	0	0	11
Rutland.....	0	0	0	1	0	2	0	0	0	0	5
Massachusetts:											
Boston.....	2	0	0	22	15	8	0	21	1	15	188
Fall River.....	1	0	0	1	2	2	0	3	0	2	26
Springfield.....	0	0	0	5	1	1	0	1	1	0	26
Worcester.....	0	0	0	1	0	5	0	1	0	2	31
Rhode Island:											
Pawtucket.....	1	0	0	0	0	0	0	0	0	0	16
Providence.....	3	0	0	47	0	1	0	1	0	8	45
Connecticut:											
Bridgeport.....	0	0	0	5	2	4	0	0	1	2	27
Hartford.....	1	0	0	0	0	1	0	0	0	7	37
New Haven.....	0	0	0	0	0	0	0	2	0	2	24
New York:											
Buffalo.....	0	0	0	6	12	14	0	7	0	24	117
New York.....	7	3	269	57	26	0	0	91	4	186	1,273
Rochester.....	0	0	1	1	1	4	0	0	1	10	63
Syracuse.....	0	0	0	101	0	2	0	1	0	44	23

City reports for week ended July 27, 1935—Continued

State and city	Diph- theria cases	Influenza		Meas- les cases	Pneu- monia deaths	Scar- let fever cases	Small- pox cases	Tuber- culosis deaths	Ty- phoid fever cases	Whoop- ing cough cases	Deaths, all causes
		Cases	Deaths								
New Jersey:											
Camden.....	0	---	0	1	0	0	0	0	0	0	14
Newark.....	0	1	0	13	4	6	0	8	0	41	91
Trenton.....	0	0	0	0	3	2	0	1	0	0	30
Pennsylvania:											
Philadelphia.....	2	2	1	28	13	8	0	24	4	60	397
Pittsburgh.....	0	---	0	9	10	9	0	4	1	26	123
Reading.....	0	---	0	5	0	4	0	0	0	2	15
Scranton.....	0	---	---	0	---	0	0	---	0	3	---
Ohio:											
Cincinnati.....	1	---	1	1	5	4	0	13	0	3	120
Cleveland.....	2	4	0	58	5	10	0	15	2	88	168
Columbus.....	2	---	0	13	1	2	0	1	0	6	76
Toledo.....	1	---	0	1	3	0	0	3	4	8	72
Indiana:											
Anderson.....	0	---	0	0	0	0	0	0	0	12	7
Fort Wayne.....	1	---	0	0	0	1	0	1	0	3	16
Indianapolis.....	0	---	0	2	7	4	0	1	1	11	100
South Bend.....	0	---	0	0	1	2	0	0	0	3	17
Terre Haute.....	1	---	0	0	0	0	0	0	0	0	16
Illinois:											
Alton.....	0	---	0	0	1	5	0	0	1	0	7
Chicago.....	11	1	0	84	28	58	0	41	3	136	600
Elgin.....	0	---	0	0	0	2	0	0	0	7	9
Moline.....	0	---	0	1	0	0	0	0	0	2	7
Springfield.....	0	1	0	0	1	2	0	0	0	13	22
Michigan:											
Detroit.....	1	2	0	29	10	16	0	16	1	174	226
Flint.....	1	---	0	1	0	3	0	0	0	12	26
Grand Rapids.....	0	---	0	11	0	2	0	0	0	33	33
Wisconsin:											
Kenosha.....	0	---	0	2	1	1	0	0	0	6	5
Milwaukee.....	1	---	0	94	1	10	0	5	0	63	87
Racine.....	0	---	0	10	0	2	0	1	0	10	9
Superior.....	0	---	0	0	0	0	0	0	0	2	16
Minnesota:											
Duluth.....	0	---	0	0	2	1	0	0	0	1	22
Minneapolis.....	0	---	0	8	4	12	0	2	17	0	96
St. Paul.....	---	---	---	---	---	---	---	---	---	---	---
Iowa:											
Cedar Rapids.....	0	---	---	0	---	0	0	---	0	3	---
Davenport.....	0	---	0	0	---	4	0	---	0	0	---
Des Moines.....	0	---	0	1	---	0	0	---	0	0	37
Sioux City.....	0	---	0	1	0	0	1	0	0	4	---
Waterloo.....	0	---	---	1	---	1	0	---	1	2	---
Missouri:											
Kansas City.....	2	---	0	0	3	1	0	5	1	7	89
St. Joseph.....	0	---	0	0	3	0	0	4	0	1	31
St. Louis.....	4	---	0	1	1	2	0	8	3	6	181
North Dakota:											
Fargo.....	0	---	0	0	1	0	0	0	2	0	8
Grand Forks.....	0	---	---	0	---	0	0	---	0	0	---
Minot.....	0	---	---	0	---	0	0	---	0	1	8
South Dakota:											
Aberdeen.....	0	---	---	3	---	0	0	---	0	1	---
Nebraska:											
Omaha.....	0	---	0	0	3	4	0	7	0	2	55
Kansas:											
Lawrence.....	0	---	---	0	---	0	0	---	0	0	5
Topeka.....	---	---	---	---	---	---	---	---	---	---	---
Wichita.....	1	---	0	0	1	0	0	1	0	2	14
Delaware:											
Wilmington.....	2	---	0	0	0	1	0	0	0	0	24
Maryland:											
Baltimore.....	1	---	1	3	5	11	0	11	2	25	163
Cumberland.....	0	---	0	0	0	1	0	0	0	0	14
Frederick.....	0	---	0	0	0	0	0	0	0	0	3
District of Colum- bia:											
Washington.....	11	---	1	5	2	3	0	4	6	5	146
Virginia:											
Lynchburg.....	0	---	0	0	1	1	0	0	1	20	7
Norfolk.....	0	---	0	0	0	0	0	5	8	0	26
Richmond.....	0	---	0	1	3	1	0	1	1	1	50
Roanoke.....	0	---	0	0	0	1	0	0	0	0	13
West Virginia:											
Charleston.....	2	---	0	0	0	0	0	2	1	2	26
Huntington.....	0	---	---	0	---	0	0	4	0	0	---
Wheeling.....	0	---	0	1	1	0	0	0	2	1	17

City reports for week ended July 27, 1935—Continued

State and city	Diph- theria cases	Influenza		Meas- les cases	Pneu- monia deaths	Scar- let fever cases	Small- pox cases	Tuber- culosis deaths	Ty- phoid fever cases	Whoop- ing cough cases	Deaths, all causes
		Cases	Deaths								
North Carolina:											
Gastonia.....	0	-----	0	0	0	0	0	0	0	1	3
Raleigh.....	0	-----	0	0	1	0	0	0	0	0	5
Wilmington.....	0	-----	0	0	2	1	0	0	1	2	14
Winston-Salem.....	1	-----	0	0	2	1	0	0	0	0	
South Carolina:											
Charleston.....	0	1	0	0	0	1	0	3	0	2	14
Columbia.....	0	-----	0	0	0	0	0	0	0	0	1
Florence.....	0	-----	0	0	0	0	0	0	0	0	9
Greenville.....	0	-----	0	0	0	1	0	0	3	0	5
Georgia:											
Atlanta.....	5	2	0	0	3	2	0	4	0	7	83
Brunswick.....	1	-----	0	0	0	0	0	0	0	0	3
Savannah.....	0	1	0	3	2	0	0	1	2	8	26
Florida:											
Miami.....	1	-----	0	0	1	0	0	2	1	0	27
Tampa.....	0	-----	0	0	1	0	0	1	0	0	16
Kentucky:											
Ashland.....	0	-----	0	0	1	0	0	1	0	0	
Covington.....	0	-----	0	0	0	0	0	2	1	0	22
Lexington.....	0	-----	0	0	0	0	0	0	0	0	
Tennessee:											
Knoxville.....	1	-----	0	0	1	1	0	2	1	0	26
Memphis.....	0	-----	0	0	4	3	0	6	5	4	84
Nashville.....	0	-----	1	0	0	0	0	4	0	5	51
Alabama:											
Birmingham.....	1	-----	1	0	1	3	0	2	2	5	56
Mobile.....	0	-----	0	0	1	1	0	0	0	0	21
Montgomery.....	1	-----	-----	0	0	0	0	-----	1	0	
Arkansas:											
Fort Smith.....	0	-----	-----	0	-----	0	0	-----	1	1	-----
Little Rock.....	0	-----	-----	0	1	1	0	4	0	0	-----
Louisiana:											
Lake Charles.....	0	-----	0	0	0	0	0	0	1	0	11
New Orleans.....	7	-----	0	3	11	3	0	9	3	2	120
Shreveport.....	0	-----	0	0	5	0	0	2	0	0	31
Texas:											
Dallas.....	0	-----	0	0	0	1	0	0	0	7	60
Fort Worth.....	0	-----	0	-----	1	2	0	3	0	4	33
Galveston.....	2	-----	0	0	1	0	0	2	1	0	13
Houston.....	4	-----	0	1	8	2	0	15	1	0	76
San Antonio.....	3	-----	1	0	2	1	0	11	0	0	69
Montana:											
Billings.....	4	-----	0	0	1	0	0	1	0	0	11
Great Falls.....	0	-----	0	0	0	0	0	0	0	5	7
Helena.....	0	-----	0	0	0	0	0	0	0	2	3
Missoula.....	0	-----	0	0	0	0	0	0	0	0	6
Idaho:											
Boise.....	0	-----	0	1	1	0	0	0	0	1	5
Colorado:											
Colorado.....											
Springs.....	1	-----	0	1	1	1	0	3	0	3	9
Denver.....	8	-----	0	7	7	11	0	2	0	4	79
Pueblo.....	0	-----	0	0	0	0	0	0	0	2	10
New Mexico:											
Albuquerque.....	0	-----	0	0	0	1	0	3	1	0	8
Utah:											
Salt Lake City.....	0	-----	0	4	1	11	0	2	0	28	26
Nevada:											
Reno.....	0	2	0	0	0	0	0	0	0	0	2
Washington:											
Seattle.....	0	-----	3	23	3	3	0	5	1	0	81
Spokane.....	0	-----	0	4	0	0	0	0	0	1	23
Tacoma.....	0	-----	0	0	1	1	0	2	0	1	28
Oregon:											
Portland.....	0	-----	0	7	0	4	1	3	0	2	78
Salem.....	0	-----	-----	1	-----	1	0	-----	0	2	-----
California:											
Los Angeles.....	6	13	1	41	8	26	0	21	0	16	309
Sacramento.....	0	1	1	7	0	4	0	0	1	0	21
San Francisco.....	0	-----	0	45	5	6	0	9	1	14	125

City reports for week ended July 27, 1935—Continued

State and city	Meningococcus meningitis		Poliomyelitis cases	State and city	Meningococcus meningitis		Poliomyelitis cases
	Cases	Deaths			Cases	Deaths	
Massachusetts:				District of Columbia:			
Boston.....	3	1	6	Washington.....	4	2	6
Fall River.....	0	0	2	Virginia:			
Springfield.....	0	0	1	Lynchburg.....	1	0	1
Connecticut:				Norfolk.....	0	0	3
Hartford.....	0	0	1	Richmond.....	0	0	3
New York:				Roanoke.....	0	0	5
New York.....	11	4	31	Tennessee:			
Pennsylvania:				Memphis.....	0	0	1
Philadelphia.....	0	1	2	Nashville.....	1	0	0
Pittsburgh.....	1	1	0	Alabama:			
Ohio:				Birmingham.....	1	0	0
Columbus.....	0	1	0	Montgomery.....	0	0	2
Toledo.....	1	0	0	Arkansas:			
Indiana:				Little Rock.....	1	1	0
Indianapolis.....	2	0	0	Louisiana:			
Illinois:				New Orleans.....	1	0	0
Chicago.....	4	0	2	Shreveport.....	0	1	0
Michigan:				Colorado:			
Detroit.....	1	0	4	Denver.....	1	0	0
Iowa:				California:			
Des Moines.....	1	0	0	Los Angeles.....	0	0	2
Delaware:				Sacramento.....	2	1	1
Wilmington.....	1	1	0	San Francisco.....	0	0	1
Maryland:							
Baltimore.....	6	1	1				

Epidemic encephalitis.—Cases: Philadelphia, 1; Chicago, 1; Detroit, 1; Baltimore, 1; Washington, 1; Sacramento, 1.

Pellagra.—Cases: Boston, 1; Gastonia, 2; Atlanta, 2; Savannah, 7; New Orleans, 4; Houston, 1; Los Angeles, 1; San Francisco, 1.

Typhus fever.—Cases: Charleston, S. C., 1; Savannah, 3; Miami, 1; Montgomery, 1; Fort Worth, 1; Houston, 1.

FOREIGN AND INSULAR

PANAMA CANAL ZONE

Communicable diseases—April–June 1935.—During the months of April, May, and June 1935, certain communicable diseases, including imported cases, were reported in the Panama Canal Zone and terminal cities as follows:

Disease	April		May		June	
	Cases	Deaths	Cases	Deaths	Cases	Deaths
Chicken pox.....	12	—	7	—	2	—
Diphtheria.....	10	—	7	1	5	—
Dysentery (amoebic).....	22	—	24	—	31	—
Dysentery (bacillary).....	—	—	2	1	2	1
Leprosy.....	2	—	—	—	1	—
Malaria.....	59	1	88	2	185	2
Measles.....	3	—	4	—	5	—
Mumps.....	—	—	—	—	1	—
Paratyphoid fever.....	—	—	—	—	1	—
Pneumonia.....	—	15	—	9	—	14
Scarlet fever.....	1	—	—	—	—	—
Tuberculosis.....	—	25	—	24	—	34
Typhoid fever.....	2	1	6	1	2	1
Typhus fever.....	1	—	2	—	1	—
Whooping cough.....	42	—	30	—	39	1

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER

NOTE.—A table giving current information of the world prevalence of quarantinable diseases appeared in the PUBLIC HEALTH REPORTS for July 26, 1935, pp. 967–983. A similar cumulative table will appear in the PUBLIC HEALTH REPORTS to be issued Aug. 30, 1935, and thereafter, at least for the time being, in the issue published on the last Friday of each month.

Cholera

Philippine Islands—Rizal Province—San Felipe Neri.—During the week ended August 3, 1935, 1 case of cholera was reported at San Felipe Neri, Rizal Province, P. I.

Plague

Argentina—Jujuy Province—Perico del Carmen.—During the month of July 1935, 1 case of plague with 1 death was reported at Perico del Carmen, Jujuy Province, Argentina.

Morocco—Mogador.—During the week ended July 27, 1935, 9 cases of plague with 3 deaths were reported in the interior region of Mogador, Morocco.

Yellow Fever

Bolivia.—Department of Santa Cruz—Chuchio.—During the month of June 1935, 1 case of yellow fever was reported at Chuchio, Department of Santa Cruz, Bolivia.

Dahomey—Porto Novo.—During the week ended July 20, 1935, 1 case of yellow fever with 1 death was reported in the vicinity of Porto Novo, Dahomey.